

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-18. (canceled)

19. (currently amended) An apparatus of producing a protein crystal, comprising:

a dialysis cell ~~having a container for containing a protein crystal and a protein solution filled around the protein crystal, and provided with a dialysis membrane~~ the dialysis cell comprising (i) a quartz thin plate for mounting the protein crystal, provided with a light reflecting thin film on a portion of a surface thereof, (ii) an inner vessel for containing the quartz thin plate therein, provided with a surface portion covered with a dialysis membrane and filled with the protein solution therein, and (iii) an outer vessel filled with the protein precipitating agent solution outside the dialysis membrane;

means a protein solution inflow source selector for controlling a concentration of the protein in the protein solution around the protein crystal, the selector being capable of repeatedly switching between a protein solution and a diluent source for introduction into the dialysis cell;

means a protein concentration measurement device for measuring a concentration of the protein solution around the protein crystal;

a two-beam interferometer for observing interference fringes around the protein crystal;

means a precipitating agent inflow concentration control element for controlling a concentration of the precipitating agent in the protein solution around the protein crystal, the control element adjusting the concentration of the precipitating agent for introduction into the dialysis cell; and

means a precipitating agent concentration measurement device for measuring the concentration of the precipitating agent in the dialysis cell.

20. (canceled)

21. (currently amended) The apparatus according to claim 19, wherein the means for measuring the concentration of the protein solution protein concentration measurement device is a spectrophotometer.

22. (currently amended) The apparatus according to claim 21, wherein the spectrophotometer measures an intensity of transmitted light that transmits a portion of the quartz thin

plate in the dialysis cell where light reflecting thin film is not provided.

23. (currently amended) The apparatus according to claim 21, ~~further comprising means wherein the outer vessel comprises the precipitating agent inflow element~~ for sending the precipitating agent solution having a desired concentration to the outer vessel of the dialysis cell.

24. (currently amended) The apparatus according to claim 21, further comprising ~~means wherein the inner vessel comprises the protein solution inflow element~~ for introducing the protein solution having a desired concentration into the inner vessel of the dialysis cell without disassembling the dialysis cell.

25. (currently amended) The apparatus according to claim 19, further comprising ~~means a photography device~~ for photographing the interference fringes by the two-beam interferometer, ~~such as a CCD camera~~.

26. (previously presented) The apparatus according to claim 19, wherein the two-beam interferometer is a Michelson type two-beam interferometer.

27. (canceled)

28. (new) An apparatus of producing a protein crystal, comprising:

an outer vessel having (i) a chamber and (ii) an inlet for introducing a precipitating agent into the chamber;

an inner vessel removably positioned within the chamber of the outer vessel, the inner vessel having (i) an interior for containing the protein crystal surrounded by a protein solution, (ii) an inlet for introducing the protein solution into the interior;

a dialysis membrane, the interior of the inner vessel and the chamber of the outer vessel being separated by the dialysis membrane;

a quartz thin plate for mounting the protein crystal, the plate having a light reflecting thin film on a portion thereof and being removably positioned in the interior of the inner vessel;

an inner vessel inlet source selector for switching between a protein solution and a diluent for introduction into the inner vessel inlet, the selector providing control of protein solution concentration in the inner vessel;

a protein concentration measurement device for measuring a concentration of the protein solution in the inner vessel;

a two-beam interferometer for observing interference fringes around the protein crystal in the inner vessel;

an outer vessel inlet concentration control element for adjusting a concentration of the precipitating agent for introduction into the outer vessel inlet; and

a precipitating agent concentration measurement device for measuring the concentration of the precipitating agent of the outer vessel.